IN THE SPECIFICATION

Please replace the paragraph beginning on line 31 of page 6 with the following paragraph:

(Amended) Radiating the diode 20 with the first frequency from the signal generator 12 and the second frequency from the signal generator 14 results in the diode producing a third order intermodulation product. This harmonic signal is detected by a dipole antenna 22 that outputs an analyzer signal to a spectrum analyzer 24. In one embodiment of the invention, the dipole antenna 22 comprises a dipole having a length of one wavelength at the output of either the signal generator 12 or the signal generator 14. The spectrum analyzer 24 responds to the analyzer signal to generate a signature display 26 that identifies the presence of the diode 20 and the intermodulation output. The spectrum analyzer 24 also outputs a signature signal for additional processing of the analyzer signal from the dipole antenna 22.

IN THE CLAIMS:

For the convenience of the Examiner, all pending claims are shown below whether or not an amendment has been made.

Cancel Claims 1-4.

1. (Canceled).

2. (Canceled).

3. (Canceled).

4. (Canceled).

5. An harmonic article identification system, comprising:

at least one semiconductor device carried by an article and responsive to at least two RF signals to generate an harmonic intermodulation output;

an antenna receiving an harmonic intermodulation output and generating an analyzer signal; and

a signal analyzer coupled to the antenna and responsive to the analyzer signal to identify the article carrying the at least one semiconductor device.

6. The harmonic article identification system as in Claim 5 wherein the at least one semiconductor device comprises at least one RF diode.

7. The harmonic article identification system as in Claim 6 wherein the at least one diode responds to RF signals in a frequency range from about 24.0 GHz to about 24.1 GHz.

8. The harmonic article identification system as in Claim 5 wherein the antenna comprises a dipole having a length of one wavelength at one of the at least two RF signals.

9. The harmonic article identification system as in Claim 5 wherein the at least one semiconductor device comprises a signature identification of the article carrying the at least one semiconductor device.

10. An harmonic article identification system, comprising:

a first signal generator operating to generate an RF signal at a first frequency;

a second signal generator operating to generate an RF signal at a second frequency;

at least one RF diode carried by an article and responsive to the first and second frequencies to generate an harmonic intermodulation output;

an antenna receiving the harmonic intermodulation output and generating an analyzer signal; and

a signal analyzer coupled to the antenna and responsive to the analyzer signal to identify the article carrying the at least one RF diode.

11. (Amended) The harmonic article identification system as in Claim 10 wherein the analyzer signal comprises a subtraction of the first frequency signal from the second frequency signal.

12. (Amended) The harmonic article identification system as in Claim 10 wherein the analyzer signal varies in accordance with the expression:

2F1 - F2,

wherein:

F1 equals the first frequency, and

F2 equals the second frequency.

13. (Amended) The harmonic article identification system as in Claim 10 wherein the analyzer signal comprises a subtraction of the second frequency signal from the first frequency signal.

14. (Amended) The harmonic article identification system as in Claim 10 wherein the analyzer signal varies in accordance with the expression:

2F2 - F1,

wherein:

F1 is the first frequency, and

F2 is the second frequency.

15. The harmonic article identification system as in Claim 10 wherein the at least one RF diode comprises a signature identification of the article carrying the at least one RF diode.

16. The harmonic article identification system as in Claim 10 wherein the at least one RF diode responds to RF signals in a frequency range from about 24.0 GH to about 24.1 GHz.

17. The harmonic article identification system as in Claim 10 wherein the antenna comprises a dipole having a wavelength determined by either the first frequency or the second frequency.

18. (Amended) A method for harmonic article identification, comprising:

generating at least two RF signals at separate frequencies;

generating an harmonic intermodulation signal by at least one RF diode carried by an article and responsive to the at least two RF signals;

generating an analyzer signal from an antenna receiving the harmonic intermodulation signal; and

generating an article identification signature by analyzing the analyzer signal from the antenna.

19. The method for harmonic article identification as in Claim 18 further comprising storing the article signature for subsequent identification of the article.

20. The method for harmonic article identification as in Claim 19 further comprising scanning the stored article signatures for identification of an article.

21. The method for harmonic article identification as in Claim 20 further comprising generating an article identification in response to scanning the stored article signatures.

22. (Amended) An harmonic article identification system, comprising:

a first signal generator outputting an RF signal at a frequency of 24.0 GHZ;

a second signal generator outputting an RF signal at a frequency of 24.1 GHZ;

at least one RF diode carried by an article and responsive to the 24.0 GHZ frequency and the 24.1 GHZ frequency to generate an harmonic intermodulation output;

a dipole antenna receiving the harmonic intermodulation output and generating an analyzer signal varying in accordance with the expression:

2F1 - F2,

wherein:

F1 equals the 24.0 GHZ frequency, and

F2 equals the 24.1 GHZ frequency; and

a signal analyzer coupled to the dipole antenna and responsive to the analyzer signal to identify the article carrying the at least one RF diode.

23. (Amended) An harmonic article identification system, comprising:

a first signal generator outputting an RF signal at a frequency of 24.0 GHZ;

a second signal generator outputting an RF signal at a frequency of 24.1 GHZ;

at least one RF diode carried by an article and responsive to the 24.0 GHZ frequency and the 24.1 GHZ frequency to generate a third harmonic intermodulation output;

a dipole antenna receiving or any other tuned antenna receiving the third harmonic intermodulation output and generating an analyzer signal varying in accordance with the expression:

2F2 - F1,

wherein:

F1 equals the 24.0 GHZ frequency, and

F2 equals the 24.1 GHZ frequency; and

a signal analyzer coupled to the dipole antenna and responsive to the analyzer signal to identify the article carrying the at least one RF diode.

24. An identification system for articles carrying at least one semiconductor device generating an harmonic intermodulation output, comprising:

a spectrum analyzer responsive to an harmonic intermodulation output generated by at least one semiconductor device carried by an article, the spectrum analyzer generating an identification signal;

a signature memory storing the identification signatures of at least one article for identification;

a comparator responsive to the identification signal of the spectrum analyzer and coupled to receive the identification signatures of at least one article for identification from the signature memory, the comparator generating an output identifying an article carrying at least one semiconductor device from the stored identification signatures.

25. An identification system as in Claim 24 further comprising an antenna receiving the harmonic intermodulation output generated by the at least one semiconductor device carried by an article and generating an analyzer signal, the spectrum analyzer responsive to the analyzer signal to generate the identification signal.

26. The identification system as in Claim 25 wherein the antenna comprises a dipole having a length of one wavelength at one of at least two RF signals.

27. The identification system as in Claim 24 further comprising a display responsive to the signal generated by the comparator to indicate identification of an article.

28. The identification system as in Claim 24 further comprising:

a first signal generator operating to generate an RF signal at a first frequency;

a second signal generator operating to generate an RF signal at a second frequency signal; and

wherein the at least one semiconductor device carried by the article responds to the first and second frequencies to generate the harmonic intermodulation output.

29. The identification system as in Claim 28 further comprising an antenna receiving the harmonic intermodulation output from the article carrying the at least one semiconductor device and generating an analyzer signal; and

wherein the spectrum analyzer responds to the analyzer signal to generate an identification signal.

30. The identification system as in Claim 29 wherein the antenna comprises a dipole having a length of one wavelength at either the first frequency or the second frequency.

31. (Amended) A method for harmonic article identification, comprising:

generating at least two RF signals at separate frequencies;

radiating with the at least two RF signals at least one semiconductor device carried by an article for identification;

generating an harmonic intermodulation signal by the at least one semiconductor device carried by the article and radiated with the at least two RF signals;

generating an analyzer signal from an antenna receiving the harmonic intermodulation output;

comparing the analyzer signal with one or more stored identification signatures, the comparator generating a signal to identify the article carrying the at least one semiconductor device from the stored identification signatures.

32. The method for harmonic article identification as in Claim 31 further comprising storing the identification signatures for subsequent comparison with analyzer signals.

33. The method for harmonic article identification as in Claim 32 wherein comparing the analyzer signal with identification signatures comprises:

scanning the stored signatures for comparison with the generated analyzer signal; and

generating an article identification signal in response to a comparison between one of the stored identification signatures and the analyzer signal.